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In the Claims

Please amend claim 13 as follows:

13. (Amended) A method of making the aircraft deicer panel of claim 1, said method comprising the steps of:

stitching the electrically conductive strand into the heater layer in the heating-dissipating pattern;

joining the [stitched] heater layer to the inner support layer and the outer cover layer; and

securing a bondside surface of the inner support layer to a surface of an aircraft.

REMARKS

By the present amendment, the specification has been added to reflect the addition of Figure 6, and claim 13 has been amended to clarify that the joining layers need not be joined after the stitching step. A clean listing of the post-amendment claims are attached for the Examiner's review.

Restriction Requirement - 35 U.S.C. § 121

The Examiner has required a restriction between claims 1-12 drawn to an electrically heated deicer panel and claims 13-23 drawn to a method of making an electrically heated deicer panel.¹ Previously, the Examiner supported this restriction requirement on the contention that "the product as claimed can be made by another and materially different process." Claim 1 was amended to remove this contention from consideration. The Examiner now supports the restriction requirement on the grounds that "the claimed method recites a specific chronological order of assembly steps which do not necessarily have to be followed in the recited sequence to fabricate the panel recited in the apparatus claims." By the present amendment, claim 13 has been amended so that the stitching step need not occur prior to the joining step. Accordingly, rejoinder of non-elected claims 1-12 is again respectfully requested.

1. The Examiner is asked to please note that it was never intended to for the telephone election to be made without traverse.

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Objections

The specification has been amended to include a brief description of added Figure 6 and reference to this figure in the detailed description. Also, the last line of claim 13 has been amended as suggested by the Examiner. Regarding claim 1, the Examiner is asked to please note that the first paragraph of this claim begins "[a]n aircraft deicer panel comprising an inner support layer which is electrically insulating."

Claim Rejections - 35 U.S.C. §103

Claims 13, 14 and 16-22 have been rejected as being obvious over U.S. Patent No. 2,653,320 to Pfenninger in view of U.S. Patent No. 1,142,393 to Bloomer. Claims 15 and 23 have been rejected as being obvious over Pfenninger in view of Bloomer, and further in view of JP2000-106268. Claims 29-32 have been rejected as being obvious over Pfenninger in view of Bloomer, and further in view of U.S. Patent No. 2,599,059 to Jones.

The Examiner again admits in the Office Action that Pfenninger does not disclose stitched heating wire, but he contends that, in view of Bloomer, this would have been obvious "in order to provide a faster method of affixing the element as well as facilitating the use of a larger quantity of heating wire per unit area as compared with conventional wire mounting techniques." However, it is respectfully submitted that if wire density was an issue (and it very much is in aircraft deicers), the applied art would motivate one of ordinary skill in the art to stick with a non-stitched arrangement. Specifically, when the Pfenninger non-stitched pattern is compared to the Bloomer stitched pattern, it is the non-stitched pattern which appears to "facilitate the use of larger quantity of heating wire per unit area."

The Examiner acknowledges in the most recent Office Action that "the meandering zig-zag pattern of Pfenninger is more densely spaced together than the sinuous pattern of Bloomer." He stresses, however, that his rejection does not rest on the premise that "Bloomer's sinuous pattern, taken in the longitudinal plane of the heater wire, used a larger quantity of heater wire per unit area." Instead, the Examiner states that he "was merely suggesting that the attachment technique of stitching a heater wire to an underlying substrate, as opposed to other attachment techniques,

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provides the added benefit of providing more heater wire per unit area than if the heater wire were not stitched." To support this position, he points to the following passages in the Bloomer patent:

[I]t is apparent that the resistance conductor so attached to the body of the pad will be quickly affixed thereto **with a maximum amount of surface or length of conductor in proportion to a minimum space.**²

[B]y employing the strand as a sewing element . . . [the pad's] utility and lasting qualities are proportionally greater, due to the fact that in stitching the strand **a greater number of feet of resistance conductor in a given length is obtained than in such pads wherein the conductor is laid thereon and secured in an ordinary manner.**³

The Examiner further explains that the Bloomer stitched heater pattern "involves not only configuring the heater in the plane of the underlying substrate, but also disposing the heater wire **transverse** to the plane of the underlying substrate." He further clarifies that:

It is the **combination** of vertical and horizontal components of the heater wire itself which gives rise to the increased heater wire per unit area of the substrate. That is, for a given surface area, a stitched heater mounting, with its requisite horizontal and vertical heater path components **necessarily** requires more wire per unit area than a heater securement utilizing only a substantial horizontal component.

While the Examiner's conclusion regarding the "increased heater wire per unit area" may or may not be correct, it would in any event be inconsistent with deicer design. The purpose of a deicer panel is not to heat an entire airfoil structure, but rather to remove ice from its accumulated surface. Heating spaces vertically below the breezeside surface of the heater layer does little to forward this objective and, in fact, robs the deicing system of heating energy for melting ice. Accordingly, one of ordinary

2. Page 1, lines 33-38, emphasis added by Examiner.

3. Page 1, lines 97-107, emphasis added by Examiner.

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skill in the art would not be motivated to provide the sinuous Pfenninger pattern with "vertical components," as this would not increase the deicing heat per unit surface area.

Accordingly, it is again respectfully submitted that the Examiner's proposed Pfenninger/Bloomer combination would not have been obvious. The secondary references (JP2000-106268 and/or U.S. Patent No. 2,599,059 to Jones) do nothing to remove the shortcomings of the base references, whereby claims 13-23 and 29-32 are believed to be patentable over the applied art.

Conclusion

In view of the foregoing, the present application is believed to be in a condition for allowance and an early indication to that effect is earnestly solicited.

Should a petition for an Extension of Time be necessary for the timely reply to the outstanding Office Action (or if such a petition has been made and an additional extension is necessary), petition is hereby made and the Commissioner is authorized to charge any fees (including additional claim fees) to Deposit Account No. 18-0988, Order No. BFGHP0210USA.

Respectfully submitted,

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CERTIFICATE OF FACSIMILE TRANSMISSION (37 CFR 1.6)

I hereby certify that this paper (along with any paper referred to as being attached or enclosed) is being facsimile transmitted on the date shown below to: Assistant Commissioner for Patents, Washington, D.C. 20231.

Date: November 7, 2001

Marian E. Vasquez
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